

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L2	57	edge\$2 near2 smooth\$3 near5 curv\$6 near5 radius\$2	US-PGPUB; USPAT	OR	OFF	2005/07/11 11:29
L3	201	(edge\$2 near2 smooth\$3) same (curv\$6 near5 radius\$2)	US-PGPUB; USPAT	OR	OFF	2005/07/11 11:30
L4	145	3 not 2	US-PGPUB; USPAT	OR	OFF	2005/07/11 11:29
L5	142	4 and (curv\$6 near2 radius\$2)	US-PGPUB; USPAT	OR	OFF	2005/07/11 11:30
L12	1421	hexahedral or (hexa adj hedra143)	US-PGPUB; USPAT	OR	OFF	2005/07/11 12:00
L13	1423	hexahedral\$2 or (hexa adj hedra143)	US-PGPUB; USPAT	OR	OFF	2005/07/11 12:22
L14	697	13 and edge\$2	US-PGPUB; USPAT	OR	OFF	2005/07/11 11:59
L15	48	14 and (radius\$3 near5 curv\$6)	US-PGPUB; USPAT	OR	OFF	2005/07/11 12:14
L16	18837	edge\$2 near curv\$6	US-PGPUB; USPAT	OR	OFF	2005/07/11 12:15
L17	35089	edge\$2 near2 curv\$6	US-PGPUB; USPAT	OR	OFF	2005/07/11 12:15
L18	11517	17 and radius\$2	US-PGPUB; USPAT	OR	OFF	2005/07/11 12:16
L19	24	18 and (hexahedral\$2 or (hexa adj hedra143))	US-PGPUB; USPAT	OR	OFF	2005/07/11 12:18
L20	15	19 and smooth\$3	US-PGPUB; USPAT	OR	OFF	2005/07/11 12:18
L21	1423	hexahedral\$2 or (hexa adj hedra143)	US-PGPUB; USPAT	OR	OFF	2005/07/11 12:25
L22	21	21 and (divi\$6 near2 (hexahedral\$2 or (hexa adj hedra143)))	US-PGPUB; USPAT	OR	OFF	2005/07/11 12:45
L23	2929	hexahedr\$4	US-PGPUB; USPAT	OR	OFF	2005/07/11 12:51
L24	791	23 and (radius\$2 or radi\$2)	US-PGPUB; USPAT	OR	OFF	2005/07/11 12:50
L25	55	24 and (model\$3 with hexahedr\$4)	US-PGPUB; USPAT	OR	OFF	2005/07/11 12:51
L26	44	25 and (curv\$6 or arc\$2)	US-PGPUB; USPAT	OR	OFF	2005/07/11 13:53
L27	83	23 and (smoot\$4 with (edge\$2 or boundar\$3))	US-PGPUB; USPAT	OR	OFF	2005/07/11 16:59
L28	28	27 and (smoot\$4 near2 (edge\$2 or boundar\$3))	US-PGPUB; USPAT	OR	OFF	2005/07/11 13:54

L29	8	("5027281"   "5031120"   "5115400"   "5126646"   "5315537"   "5442569"   "5522019"   "5553206").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2005/07/11 14:06
L30	750	23 and smoot\$4	US-PGPUB; USPAT	OR	OFF	2005/07/11 16:03
L31	55	27 not 28	US-PGPUB; USPAT	OR	OFF	2005/07/11 16:03
L32	150	23 and (smoot\$4 same (edge\$2 or boundar\$3))	US-PGPUB; USPAT	OR	OFF	2005/07/11 16:53
L33	67	32 not 27	US-PGPUB; USPAT	OR	OFF	2005/07/11 16:54
L34	17023	(smoot\$4 near2 (edge\$2 or boundar\$3))	US-PGPUB; USPAT	OR	OFF	2005/07/11 18:44
L35	2932	34 and model\$2	US-PGPUB; USPAT	OR	OFF	2005/07/11 17:00
L36	515	35 and mesh\$2	US-PGPUB; USPAT	OR	OFF	2005/07/11 17:01
L37	260	36 and (radius or radi\$2)	US-PGPUB; USPAT	OR	OFF	2005/07/11 17:01
L38	98	37 and @ad<"20000612"	US-PGPUB; USPAT	OR	OFF	2005/07/11 17:13
L39	68	37 and @rlad<"20000612"	US-PGPUB; USPAT	OR	OFF	2005/07/11 17:01
L40	133	38 or 39	US-PGPUB; USPAT	OR	OFF	2005/07/11 17:02
L41	53	40 and hex\$8	US-PGPUB; USPAT	OR	OFF	2005/07/11 18:44
L42	188	35 and ((radius\$1 or radi\$2) near5 (edge\$2 or boundar\$3))	US-PGPUB; USPAT	OR	OFF	2005/07/11 17:14
L43	112	42 and @ad<"20000612"	US-PGPUB; USPAT	OR	OFF	2005/07/11 17:13
L44	60	42 and @rlad<"20000612"	US-PGPUB; USPAT	OR	OFF	2005/07/11 17:13
L45	125	43 or 44	US-PGPUB; USPAT	OR	OFF	2005/07/11 17:13
L46	119	35 and (radius\$1 near5 (edge\$2 or boundar\$3))	US-PGPUB; USPAT	OR	OFF	2005/07/11 17:14
L47	3	("5892515").URPN.	USPAT	OR	OFF	2005/07/11 18:14
L48	0	("6727898").URPN.	USPAT	OR	OFF	2005/07/11 18:14
L49	4	("5315537"   "5442569"   "5522019"   "5553206").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2005/07/11 18:43
L50	2104	(382/128,266).CCLS.	US-PGPUB; USPAT	OR	OFF	2005/07/11 18:43

L51	190	50 and (smoot\$4 near2 (edge\$2 or boundar\$3))	US-PGPUB; USPAT	OR	OFF	2005/07/11 18:44
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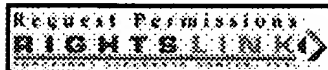
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## Fast 3-D edge element analysis by the geometric multigrid method using an accelerated symmetric Gauss-Seidel smoother

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### Abstract

A fast magnetostatic field analysis by the three-dimensional (3-D) geometric multigrid method using a symmetric Gauss-Seidel smoother is presented. The multigrid method uses a symmetric Gauss-Seidel smoother with gradient acceleration. The convergence and the speed of the V- and W-cycle multigrid methods are compared with the multigrid using Gauss-Seidel. Comparison is also made with the finite element method (FEM) using ICCG. The multigrid with the accelerated symmetric Gauss-Seidel smoother has a stable convergence rate that does not deteriorate for bad quality meshes. It is much faster than conventional multigrid with Gauss-Seidel and the FEM using ICCG.

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### Author Keywords

Not Available

### References

- 1 V. Cingoski, R. Tokuda, S. Noguchi, and H. Yamashita, "Fast multigrid solution method based on finite element meshes," *IEEE Trans. Magn.*, vol. 36, pp. 1539-1542, July 2000.  
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- 2 B. Weiss and O. Biro, "Edge element multigrid solution of nonlinear magnetostatic problems," *IEEE Trans. Magn.*, vol. 20, no. 2, pp. 357-365, 2001.  
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- 3 M. Schinnerl, J. Shoberl, and M. Kaltenbacher, "Nested multigrid methods for the fast computation of 3D magnetic fields," *IEEE Trans. Magn.*, vol. 36, pp. 1557-1560, July 2000.  
[Abstract](#) | [Full Text: PDF](#) (96KB)
- 4 H. De Gersem and K. Hameyer, "Full multigrid for magnetostatics using unstructured meshes," *IEEE Trans. Magn.*, vol. 37, pp. 3460-3464, Sept. 2001.  
[Abstract](#) | [Full Text: PDF](#) (144KB)
- 5 A. Kameari, "Application of geometrical multigrid method to electromagnetic computation method," in *Proc. Electrical Engineering Research Conf. Kita Kyushu, Japan*, no. RM-2003-05-13 11:47:14.0

2001, pp. 61-66.

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- 6 V. Spasov, S. Noguchi, and H. Yamashita, "Fast finite element analysis by 3D geometric edge elements," in *Proc. 11th Magnetodynamics (MAGDA) Conf.* Tokyo, Japan, Mar. 246-249.

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- 7 M. A. Olshanskii and A. Reusken, "On the convergence of a multigrid method for linear problems," *Computing*, vol. 65, no. 3, pp. 193-202, 2000.

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- 8 F. L. Hageman, *Applied Iterative Methods* New York: Academic, 1981.

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